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A Survey of Member Factories of the Minnesota Cheese Producers Association 1945

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A SURVEY OF MEMBER FACTORIES OF THE MINNESOTA CHEESE PRODUCERS' ASSOCIATION

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INTRODUCTION

The area around Pine Island, extending into the counties of Dodge, Goodhue, and Olmsted, has long been noted for its milk and cheese production. In the interests of more effective marketing, a number of small factories organized the Minnesota Cheese Producers' Association at Pine Island in 1921. The Minnesota Cheese Producers' Association in turn became a member of the Wisconsin Cheese Producers' Association and since 1933 has been a member of Land O' Lakes Creameries, Inc. Warehousing facilities were established at Pine Island by a separate private association known as the Minnesota Cheese Producers' Cold Storage and Warehouse Association, which was dissolved in 1938 and merged into the Minnesota Cheese Producers' Association.

At the time of this study the Minnesota Cheese Producers' Association had 14 member factories. The study was limited to member factories, but there are several other cooperative and some private cheese factories in the area.

The study was made at the request of the Association and boards of directors of local cheese factories. Numerous local milk producers, and especially some directors of local factories who face the need of heavy expenditures in re-equipping and modernizing their old and small volume factories, are considering the possibility of consolidating the existing manufacturing facilities and increasing the operating efficiency. The county agricultural agents in these counties called meetings so that such procedure might be discussed by a larger group in the area. These meetings led to the request for a survey to be made by the county agents and marketing specialists from the Divisions of Agricultural Economics and Agricultural Extension of the University of Minnesota.

ORGANIZATION AND MANAGEMENT

Cheesemaking by cooperatives is a business of long standing in these counties. However, of the 14 factories studied only one was organized as early as 1904. Ten were organized between 1908-1912 and two in 1918.

At the time of the study, the incorporation period for two associations had expired, and extension or reorganization had not been effected. Five other associations were still organized under old cooperative laws wherein currently required cooperative procedure is not fully outlined and covered. These associations should change to the more recent Minnesota cooperative law and amend their articles of incorporation in full.

The authorized capital stock of these factories ranges from a low of $500 to a high of $10,000. The amount of capital stock outstanding ranges from $1300 to $8590. Two factories are above their legal limit and have more stock outstanding than the amount authorized. The par value of shares in three factories is $100, in four it is $50, in four it is $25, in one it is $10, and in two it is $5. To meet income tax exemption requirements it would be desirable to reduce the par value of the stock in the factories where it is now comparatively high, because in some of these factories non-stockholder patrons are allowed credit toward a share of stock out of patron equity reserves. Such patrons would become stockholders sooner if the par value of the stock were reduced. In the 14 associations studied, 81 patrons were not stockholders.

[1]The authors wish to express their appreciation to county agents V. Sander and G. J. Kunau for their assistance in gathering data and to county agent M. Hoberg, J. Gordon, manager of the Minnesota Cheese Producers' Association, and H. L. Harris, editor of the Mantorville Express, for their splendid cooperation throughout this study.

Stock held by non-patrons should also be retired. The Internal Revenue Code provides that "substantially all of the stock must be held by producers using the association." Out of a combined total of 550 stockholders in these 14 factories, 128 (23 per cent) were non-patron stockholders.

Nine of these factories have five men on the board of directors; and the other five factories have seven. In most cases the president of the board serves as manager. In a few factories the secretary is manager. This is different from the policy in most of the creameries in Minnesota where a general manager is hired by the board of directors. The managers' salaries range from none up to a high of $10 per month.

In eleven factories, the records are kept by a farmer secretary, in one by the cheesemaker, and in the other two by the cheesemaker's wife. All factories need a more complete system of records and in a number of them the present records are wholly inadequate. Farmer secretaries are in many cases too busy to do the job well and in just as many cases the secretary's salary does not permit the time and effort that is necessary to keep good records. Three secretaries received only $10 per month, one $15, two $20, two $21, three $25, one $30, one $50, and one $60 per month.

FINANCING

According to the balance sheet data shown in Tables 1 and 2, the net value of all assets owned by the fourteen factories averaged $23,604 per plant. The assets of individual plants varied from $11,711 to $69,791. The combined net value of all the assets of these associations totaled $330,465.

The operating capital of these plants, including cash, receivables, and inventories averaged $6,822 per plant, or 28.9 per cent of their total capital. The largest item in this group of assets consisted of $4,781 of receivables represented by cheese being marketed thru Land O' Lakes.

Investment assets consisting almost entirely of equities owned in central cooperative associations constituted the largest proportion of the total assets of these factories. At the close of 1944, the average volume of investments was $10,843 or 45.9 per cent of all assets. Stock owned in the Minnesota Cheese Producers' Association averaged $757 per plant, while additional patronage equities accumulated in the warehouse and creamery operated by the Association at Pine Island averaged $3,430 and $685 respectively. Thus, the local plants have an average investment of $4,873 in the securities of their marketing association alone. Even a larger proportion of the investment assets, $5,884 per plant, is represented by preferred stock and certificates of interest issued by Land O' Lakes Creameries. Land O' Lakes preferred stock was acquired from patronage refunds on cheese marketed thru that organization. Certificates of interest were obtained by a regular deduction of 1/8 cent per pound of cheese which was taken to supply the central organization with capital needed in its operations.

The securities which the local plants own in their central cooperatives are set up on the revolving fund basis. As soon as the central organizations have the capital needed to finance their operations, the oldest equities held by the locals will be paid in cash. Several of the securities have started to revolve and cash has been obtained.

Table 1. Asset Value of 14 Cheese Factories--December 31, 1944

Items	Your factory	Average of 14 factories	Per cent of total value
Current Assets:			
Cash	_____	$1,339.66	5.68
Receivables (general & patrons)	_____	4,781.89	20.26
Cheese inventory	_____	272.23	1.15
Supplies inventory	_____	385.65	1.63
Prepaid expenses	_____	42.57	.18
Total current assets	_____	$6,822.00	28.90
Investment Assets:			
M.C.P.A. - stock	_____	$ 757.14	3.21
M.C.P.A. - warehouse	_____	3,430.22	14.53
M.C.P.A. - creamery	_____	685.75	2.91
L.O.L. - pfd. stock	_____	4,150.00	17.58
L.O.L. - certs. of interest	_____	1,734.42	7.35
Other investments	_____	85.57	.36
Total investments	_____	$10,843.10	45.94
Long-term Assets:			
Land	_____	$ 121.85	.52
Buildings	_____	6,030.84	25.55
Reserve for deprec. bldgs.	_____	2,765.22	11.72
Buildings (net)	_____	$3,265.62	13.83
Machinery and equipment	_____	5,631.21	23.85
Reserve for deprec. M. & E.	_____	3,079.09	13.04
Machinery and equipment (net)	_____	$2,552.12	10.81
Total long-term assets	_____	$5,939.59	25.16
Total All Assets	_____	$23,604.69	100.00

Of the total assets, $5,939 or 25 per cent were invested in long-term assets in the form of land, buildings, and equipment. Buildings at their net or depreciated value constituted 13.8 per cent of all assets. The net depreciated value of equipment in these plants represented 10.8 per cent of the total capital. It will be observed that the average equipment is carried at less than half of its original value, which indicates that a high degree of depreciation has occurred and there is a growing need for replacement. Many of the buildings are likewise in urgent need of replacement. It should be noted that the buildings and equipment have been included at values carried on the books of these plants. A special appraisal of the equipment was made by men familiar with the market value of cheesemaking equipment. The book value of all plants combined was 1.6 times that of the appraised value, with large variation between factories. Ten factories carried a higher book value and four lower than the appraised value. In one case the book value was over 4 times as high as the appraised value, but in several cases it was only half as high. It should be noted that book values are "going concern" values and in case of liquidation most of these facilities would very probably bring considerably less than is shown on the books.

Sources of Capital

Of the total capital of these factories only $5,403 or about 23 per cent was provided from creditor sources. The remainder of the capital, $18,201 or 77 per cent, was financed by member and patron equities. Since the largest liability (creditor) item represented amounts owed to patrons on account, and since most of the patrons were also members, this amount may in a sense also be considered to be capital provided by members. This would bring patron-member contributions to capital to about 95 per cent of the total, leaving only 5 per cent provided by distinctly outside creditors.

Table 2. Liabilities & Member & Patron Equities of 14 Cheese Factories--Dec. 31, 1944

Items	Your factory	Average 14 factories	Per cent of total value
Current Liabilities:			
Accounts payable - patrons	_____	$4,162.16	17.63
Accounts payable - general	_____	441.47	1.87
Short-term notes	_____	107.67	.46
Accrued expenses payable	_____	361.02	1.53
Total current liabilities	_____	$5,072.32	21.49
Long-term Liabilities:			
Mortgages and long-term notes	_____	330.80	1.40
Total all liabilities	_____	$5,403.12	22.89
Member and patron equities:			
Capital stock outstanding	_____	$2,899.11	12.28
Patron equity reserve - prior years	_____	5,455.46	23.11
Patron equity reserve - current	_____	625.06	2.65
Surplus	_____	9,221.94	39.07
Total equities	_____	$18,201.57	77.11
Total Liabilities and Equities	_____	$23,604.69	100.00

Only three associations borrowed on the basis of either short or long-term notes and mortgages, with an average of $1,877 per association. Members and patrons have provided capital in these plants by the purchase of stock, by the creation of patron equity reserves, and by additions to surplus. The average value of outstanding capital stock shares was $2,889. The remainder of member-patron financing has been supplied by retaining in the business the annual averages or balances remaining after costs in the form of patron equity reserves and surplus. Nine of the associations which have modernized their financing practices to conform more nearly to income tax regulations have segregated annual averages in patron equity reserve accounts in which the share of each patron is definitely shown. These associations also plan to revolve these equities as soon as their equities in the central organizations revolve.

All of the associations still have some unallocated surplus items on their books, averaging $9,221, which have not as yet been assigned to the credit of individual patrons. In the nine associations having patron equity reserve accounts, some unallocated surplus remained because some asset items were included in this study which either had not been recognized by the local associations or were not brought on the books at the close of the fiscal year.

Evaluation of Financial Condition

The financial condition of these associations at present is relatively good. Enough current assets are available on the average to meet all current liabilities (current debts) owed by the associations. The current ratio, the ratio of current assets to current liabilities, is about $1.3 to $1. While this is adequate, it is frequently recommended that an association have at least $2 of current assets for every $1 of current liabilities.

Member and patron equities relative to liabilities are in the ratio of $3.37 for each $1 of liabilities which is very favorable, showing adequate member and patron participation in the financing of the business.

While the financial picture presented by these factories is favorable at present, it should be noted that the situation could be changed radically if in the next year or two these associations made the replacements of buildings and equipment which will be needed to meet sanitary inspection standards and to produce top quality products. Before any association goes into debt to finance replacements or improvements, it should consider carefully if this is in the best interest of its patrons or if cooperation with neighboring factories to build a larger, diversified, and more efficient dairy plant would be more advisable.

FACTORY OPERATIONS

Labor and Management

Differences in the operating efficiency of cheese plants depend to a large extent upon variations in the use of labor and management. Labor costs in the 14 factories represented about 40 per cent of all operating costs. In total operating costs of 3.016 cents, the average labor cost was 1.189 cents per pound of cheese made (Table 3).

There is considerable variation in the labor cost of individual factories, varying from 1.628 cents per pound in one plant to .999 cents in another. Some of the more important factors responsible for these labor cost variations are (1) differences in the volume of output, (2) how effectively the labor is used, and (3) differences in the rate of wages paid to employees. With few exceptions the factories with the largest volume of cheese output tend to have lower labor costs per pound than the smaller volume plants.

The average wage paid cheesemakers was between $200 and $225 a month. Four plants were paying $200 a month and another four paid $225. In addition, a residence was provided for the cheesemaker in all but one of the factories. The monthly wage of first helpers ranged from $75 to $225, with an average of about $175 a month. Helpers were not provided with a residence.

Table 3. Comparison of Operating Costs of 14 Cheese Factories--1944

Operating cost items	Your factory	Average of 14 plants	Highest cost plant	Lowest cost plant
		Cents per pound cheese made		
Plant Expense:				
Labor	_____	1.189	1.618	1.021
Packing supplies	_____	.489	.438	.447
General supplies	_____	.487	.681	.394
Fuel	_____	.292	.387	.266
Power and light	_____	.064	.119	.052
Social security taxes	_____	.013	.017	.021
Local taxes	_____	.021	.052	.008
Insurance	_____	.032	.057	.019
Repairs	_____	.058	.068	.009
Depreciation - buildings	_____	.048	.183	.054
Depreciation - equipment	_____	.149	.148	.137
Interest	_____	.007	-	-
Miscellaneous	_____	.028	.021	.043
Total plant expense	_____	2.877	3.789	2.471
Administrative Expense:				
Office salaries	_____	.096	.165	.054
Directors' fees	_____	.019	.059	.040
Office supplies	_____	.004	.014	.002
Telephone and telegraph	_____	.007	.032	-
Advertising	_____	.013	-	.022
Total administrative expense	_____	.139	.270	.118
Total Operating Expense	_____	3.016	4.059	2.589
Average Volume (lbs. of cheese)	_____	301,948	75,639	208,533

Other Plant Expenses

Supplies - The largest items of plant expense were for packing and general supplies which averaged .489 and .487 cents a pound respectively. The largest packing supplies outlay was for cheese boxes. In the general supplies are included all other factory supplies including rennet, salt, color, washing powders, etc. Variations in the per unit cost of these items from plant to plant was not large and differences are probably explained largely by differences in inventory valuation.

Fuel, power, and light - The average cost of fuel in these plants was .292 cents a pound. These costs varied from .141 to .504 cents in the various plants. Many factors account for the differences in the fuel costs. Some plants were still burning wood while others used only coal. Probably the largest variation in this group of costs was due to the efficiency with which the boiler was operated, and the economy with which steam and hot water were used in the respective plants. The per unit fuel and power costs of the larger volume plants tended to be lower than in the smaller volume plants.

Building and equipment expense - In this group of expenses are included local taxes, insurance, repairs, depreciation of facilities, and interest. These items vary widely from plant to plant because of differences in volume of output, location of plant whether inland or in a village, original cost of facilities, and effectiveness in the utilization of facilities. In a given plant, the year-to-year outlay for this group of items does not vary much, hence the cost per unit can be reduced quite significantly by increasing the volume of output of the plant.

Local taxes in these 14 plants were low, averaging $63 per association. Insurance costs averaged $96, while repairs were $175 for the year.

The largest items in building and equipment expense were depreciation of buildings and equipment, which averaged .048 and .149 cents a pound of cheese respectively. A number of factories, four to six plants, were not making any or only irregular provisions for depreciation of their facilities. (Note: to make the cost records comparable, an estimate for depreciation of buildings and equipment of these factories was included in the averages.) Failure to provide for depreciation results in an understatement of costs and an overstatement of what may be paid for butterfat. Factories neglecting their depreciation charge should recognize that this policy results in paying out a part of the capital of the association to the patrons in higher than warranted butterfat prices.

Administrative Expense

Since administrative procedures in these plants are relatively simple, the average outlay for administrative expenses amounted to only .139 cents a pound. Office salaries, amounting to $290 a year on the average, represent the largest item in this group of expenses. The outlay for office salaries varied from $112 to $673 for the year. These salaries consisted mainly of payments to the cheesemaker, the association secretary, or some other employee for services in keeping the accounts and records of the association.

Total Costs

The total operating cost of this group of plants averaged 3.016 cents per pound of cheese made in 1944 (see Table 3). The range in the total cost per pound in these fourteen factories is as follows from the lowest to the highest: 2.589, 2.639, 2.785, 2.810, 2.878, 2.912, 2.928, 2.944, 3.045, 3.139, 3.347, 4.037, and 4.059 cents.

It may be pointed out that the plant with the smallest volume of cheese made incurred the highest cost per unit. The plants with larger volume of output tended to have lower per unit costs. Cost comparisons of cheese plants in other areas of the Middle West showed a definite tendency for per pound costs to decline as the volume of cheese produced was increased.

Condition of Records

Study of the accounting procedures used in this group of factories revealed the need for considerable improvement, if the records are to serve as an effective tool in increasing the efficiency of operations. Only three or four factories had a reasonably complete system of journals and ledgers for the entry of daily transactions. As far as could be ascertained, none of the plants prepared complete monthly statements for the use of their directors. Monthly reports of this type would be of great value in improving operating results.

Only two factories had their records audited in the past year by professional auditors. Several more plants had periodic audits by members of the board of directors or other local people. A number of plants did not prepare a complete annual

balance sheet and operating statement for the use of directors and patrons at the close of the year. Summaries of this kind are a minimum necessity in any business, but are even more important in a cooperative where a well-informed membership is essential to successful and democratic operation.

If the records are to be improved, it will be necessary to pay secretaries for the additional time this will require or to employ qualified bookkeepers. Since any one factory does not have enough record work to employ a full-time bookkeeper, it may be well for a number of plants to employ one to serve them jointly. It might also be arranged to keep the books for the local associations at the association office in Pine Island. Either of these plans would make it possible to keep a better set of records and with little added cost. One of the advantages of consolidation would be that better records could be kept at lower per unit costs.

MILK RECEIPTS

Method of Procurement, Patronage, and Factory Location

This is about the only area in Minnesota where a large percentage of the milk is still delivered directly to the manufacturing plant by producers. Only three factories used trucks and hauled for only 89 out of the total of 503 patrons selling to the fourteen factories. The truck routes are short and the rate charged by the contract hauler is 15 cents per hundredweight of milk.

The largest factory had 122 out of the total of 503 patrons; two other larger factories had 66 and 50. The other eleven had a total of only 271 patrons or an average of 25. The smallest factory had only nine patrons. The small size of these associations is further indicated by the limited territory they serve. Eleven out of the fourteen factories had their farthest patron only three miles or less from the factory. The three factories having patrons farther out are those who depend in part on truck delivery. The location of the cheese factories, volume of milk received at each factory, and the approximate area served is given in Figure 1 (see map which follows).

Volume

The milking herds in this area are generally large. Several factories reported milk receipts from the largest patron at 1800 pounds per day during the flush production period. However, there is considerable variation in size of herds within the area. Daily milk receipts per patron during the flush production period varied from an average of 272 pounds in one factory to 712 pounds in another. Ten factories averaged over 500 pounds per patron per day during this period. The total annual and daily milk receipts at factories is given in Table 4.

Thirty-five years ago when most of these factories were organized and built they may have served a purpose. With improved roads and the possibility of truck transportation there are now too many factories for efficient operation. The longer haul and disadvantages that would come with a concentration of the milk at one point would be easily offset by the advantages in larger volume, increased efficiency, and lower operating costs. It can be observed from Figure 1 that numerous milk producers are at about equal distance or even closer to several other factories than the one they haul their milk to. Also, the area within a 10-mile radius of the present largest member factory includes a large proportion of the patrons now selling to the fourteen factories. This area should not be too large for direct concentration to one factory.

Fig. 1. Location, Volume, and Approximate Area of Cheese Factories

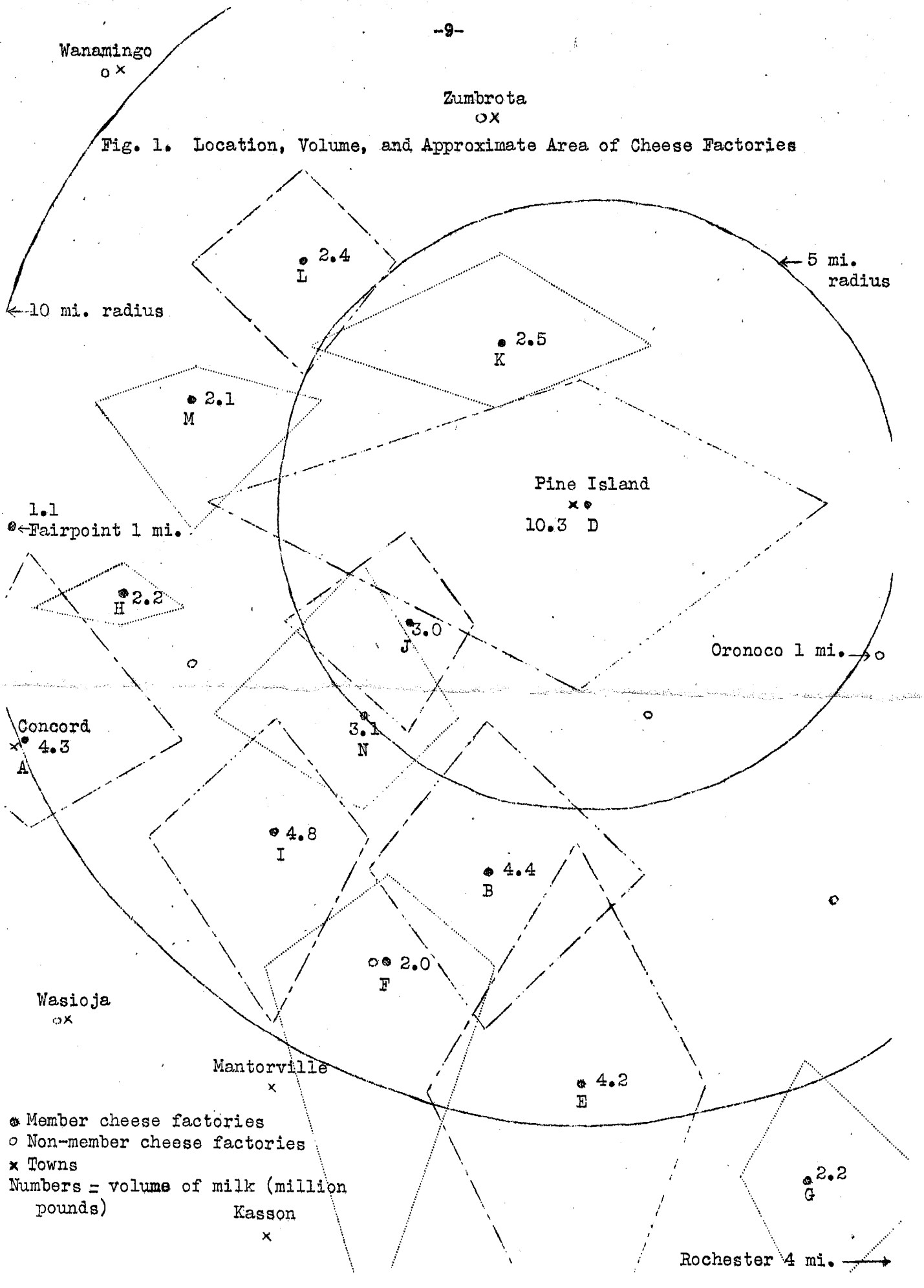

Table 4. Total Annual and Average Daily Milk Receipts at 14 Factories, and Per Cent of Total of All Factories

Factory	1943 Total volume	1943 Average daily volume	1943 Per cent of total	1944 Total volume	1944 Average daily volume	1944 Per cent of total
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
A	4,711,282	12,908	9.6	3,959,322	10,818	8.1
B	4,352,100	11,924	8.9	4,514,185	12,334	9.3
C	1,299,039	3,559	2.7	866,617	2,368	1.8
D	10,369,796	28,410	21.2	10,212,187	27,902	21.0
E	4,182,226	11,458	8.5	4,214,737	11,515	8.7
F	1,829,524	5,012	3.7	2,074,725	5,668	4.3
G	2,097,793	5,747	4.3	2,323,419	6,348	4.8
H	2,452,133	6,718	5.0	2,383,695	6,513	4.9
I	4,756,618	13,032	9.7	4,895,891	13,377	10.1
J	2,996,986	8,211	6.1	2,917,870	7,972	6.0
K	2,558,693	7,010	5.2	2,413,410	6,594	5.0
L	2,483,961	6,805	5.1	2,379,232	6,501	4.9
M	1,725,011	4,726	3.5	2,425,790	6,628	5.0
N	3,194,031	8,751	6.5	2,993,406	8,179	6.1
Total	49,009,193	134,271	100.0	48,574,486	132,717	100.0
Avg. per factory	3,500,657	9,591	7.2	3,469,606	9,480	7.2

The average daily milk receipts at the largest plant were about 28,000 pounds. The four next largest averaged 12,000 pounds. The smallest plant had receipts of only 2,368 pounds, and the remaining eight averaged 6,800 pounds per day in 1944.

The Pine Island factory alone handled over one-fifth of the total volume of milk. The five largest factories, Pine Island, Milton, Concord, County Line, and Hartford, received 57.9 per cent of all the milk in 1943 and 57.2 per cent of the total in 1944. With two or three working shifts during the heavy production season and a fuller utilization of existing equipment, it appears that these five factories, or possibly even four of them, could handle the entire volume of milk now handled by the 14 factories. Operating costs could be greatly reduced in this way. However, this would not be satisfactory from a longer time standpoint because these larger factories are not distributed evenly in the area. Also, the equipment is old and worn out in one factory and the building is worn out in another. Further, after such a partial consolidation, the remaining factories would still not have enough volume to do the most efficient manufacturing job. As indicated in Table 4, the average daily volume of all plants was only slightly over 130,000 pounds per day. This is less than the receipts at numerous large milk plants and larger cheesemaking operations in the state. Also, the patron area is sufficiently small so that the milk could be economically and successfully transported to one or at the most two larger factories. With cheese production at only one point in the area, diversification and the manufacture of other dairy products could be more easily effected. Such concentration would allow for distribution of the whey in a manner that should net the producer a larger return.

Seasonality

During the war period prices for manufactured dairy products and prices for milk to producers have been more uniform throughout the year compared to the prewar period. As a result, the trend in Minnesota has been for producers to increase milk production relatively more in the low-feed-cost summer months than in the fall and winter months when feed costs are higher. This trend apparently prevailed in the area studied, as indicated by the extreme seasonality in milk receipts at these factories as shown in Table 5.

Table 5. Monthly Milk Receipts at Cheese Factories and Monthly Index

Factory	1943 Total milk receipts 13 factories*	1943 Index Avg. monthly receipts=100	1944 Total milk receipts 14 factories	1944 Index Avg. monthly receipts=100
	Pounds		Pounds	
January	2,845,929	72.2	3,127,334	77.3
February	3,062,822	77.7	3,654,187	90.3
March	4,229,123	107.3	4,717,645	116.6
April	4,628,482	117.5	5,150,192	127.2
May	5,900,632	149.7	6,078,326	150.2
June	6,293,195	159.7	6,303,808	155.8
July	5,488,193	139.3	5,399,051	133.4
August	4,460,964	113.2	4,101,924	101.4
September	3,531,345	89.6	3,008,229	74.3
October	2,528,995	64.2	2,398,195	59.3
November	1,920,848	48.7	2,079,618	51.4
December	2,393,654	60.7	2,555,977	63.2
Total	47,284,182		48,574,486	
Monthly average	3,940,349	100.0	4,047,874	100.0
Monthly range	4,372,347	111.1	4,224,190	104.4

*One of the 14 factories operating only part of the year was eliminated.

The largest monthly volume in both years came in June when it was more than three times that of the low volume in November. Such extreme seasonality in milk receipts greatly complicates the labor situation in these factories. In most instances some part-time help was provided during months of large receipts, but not to the same extent that milk receipts increased. For this reason, the amount of cheese made per worker is much larger in the heavy milk production months, and per unit costs are lower, than in the months of low production. It would be desirable for the factories if milk receipts were less seasonal. With the existing seasonal situation, cheese factory labor and plant facilities could be utilized more effectively and efficiently if these factories were consolidated.

Butterfat Test and Yield of Cheese

The average test of milk received at each factory, the yield of cheese per hundredweight of milk, and the fat content of the cheese are given in Table 6.

Table 6. Butterfat Content of Milk Received and Cheese Made, and the Yield of Cheese

Factory	1943			1944		
	Per cent butterfat in milk	Pounds of cheese per hundredweight of milk	Per cent butterfat in cheese	Per cent butterfat in milk	Pounds of cheese per hundredweight of milk	Per cent butterfat in cheese
1	3.37	9.07	37.12	3.20	8.80	36.35
2	3.26	8.68	37.52	3.29	8.59	38.31
3	3.16	8.65	36.49	3.16	8.69	36.33
4	3.43	9.23	37.21	3.37	8.94	37.71
5	3.14	8.82	35.58	3.10	8.65	35.80
6	3.17	8.75	36.22	3.14	8.47	37.12
7	3.23	8.86	36.43	3.30	8.61	38.31
8	3.34	8.93	37.35	3.36	8.98	37.45
9	3.34	8.71	38.37	3.33	8.72	38.17
10	3.23	8.92	36.18	3.30	8.73	36.64
11	3.31	8.86	37.33	3.25	8.71	37.29
12	3.32	9.06	36.68	3.36	8.73	38.64
13	3.21	8.88	36.16	3.23	8.83	36.56
14	3.27	8.62	37.96	3.26	8.58	37.94
Avg. all factories	3.26	8.85	36.89	3.24	8.70	37.19

The yield of cheese per hundredweight of milk obtained by these factories is somewhat lower than in some of the other cheese areas. This is explained by the relatively low test of the milk and a relatively low moisture content in the cheese. The price paid for cheese by the Minnesota Cheese Producers' Association is based upon the moisture content, with an increased price for cheese of lower moisture content and a reduced price for cheese of higher moisture content. This leaves no encouragement for factories to make cheese with a high moisture content.

QUALITY

Lack of Pasteurization

Most of these factories are still making cheese from raw milk. Several cheesemakers and directors mentioned the desirability of making cheese from pasteurized milk, but face the problem of getting much new equipment at a cost that cannot be justified with the small volume of cheese that is being made. Those having pasteurization equipment have succeeded in selling a higher percentage of top-grade cheese. Great variation prevailed in the percentage of top-grade cheese sold by raw milk factories, owing to variations in factory management, plant equipment, and the quality of milk received.

Cheese Grades

All factories sold the cheese to the Minnesota Cheese Producers' Association as State Grade (top grade), Junior Grade, or Undergrade. The variation between factories in the percentage of State Grade cheese sold in 1943 and 1944 is shown in Table 7.

Table 7. Per Cent of Total Cheese Sold in Each Grade--by Factories

Number	1943 State Grade	1943 Junior Grade	1943 Under-grade	1944 State Grade	1944 Junior Grade	1944 Under-grade
1	93.0	6.7	.3	73.8	19.9	6.3
2	76.7	19.9	3.4	57.2	41.5	1.3
3	97.4	2.1	.5	96.6	2.9	.5
4	92.9	6.8	.3	92.9	6.7	.4
5	93.6	6.4	--	96.0	4.0	--
6	85.8	11.6	2.6	81.2	15.8	3.0
7	95.2	4.5	.3	94.0	5.5	.5
8	90.1	9.5	.4	93.5	5.4	1.1
9	89.9	7.9	2.2	98.7	1.1	.2
10	85.5	10.3	4.2	89.7	7.7	2.6
11	99.6	.4	--	99.7	.3	--
12	49.6	28.9	21.5	51.1	28.4	20.5
13	98.6	1.4	--	96.1	3.7	.2
14	95.7	3.6	.7	83.1	13.1	3.8
Avg. of all	92.2	6.2	1.6	89.4	8.8	1.8

In early 1943 the price received for Junior Grade cheese was 1/2 cent per pound less than for State Grade. The Undergrade cheese brought about 3½ cents per pound less than State Grade. In August, 1943, these price margins were reduced and since that time State and Junior Grade cheese have been sold at the same price, and the price margin between State and Undergrade cheese has been greatly narrowed. This, together with a shortage of labor on farms and in some factories, resulted in less emphasis on quality. In comparing the percentages of various grades of cheese sold, as shown in Table 7, it will be noted that quality was generally lower in 1944 than in 1943.

Seasonal Variation in Grades

As would be expected, a much larger proportion of Junior or Undergrade cheese was sold in June, July, and August when weather conditions are less favorable. The monthly variation is given in Table 8.

Table 8. Per Cent of Total Cheese Sold in Each Grade--by Months

Number	1943 State Grade	1943 Junior Grade	1943 Under-grade	1944 State Grade	1944 Junior Grade	1944 Under-grade
January	94.3	3.6	2.1	96.9	2.6	.5
February	97.3	2.0	.7	97.8	1.2	1.0
March	96.5	3.4	.1	98.9	.6	.5
April	96.7	3.0	.3	96.7	2.9	.4
May	94.7	3.8	1.5	93.4	6.6	--
June	87.0	9.5	3.5	77.9	20.0	2.1
July	82.4	15.3	2.3	76.7	17.2	6.1
August	86.0	11.1	2.9	75.9	20.0	4.1
September	97.8	1.5	.7	89.2	8.0	2.8
October	98.5	1.2	.3	92.8	5.8	1.4
November	97.7	2.3	--	96.9	2.6	.5
December	99.0	.8	.2	94.8	4.4	.8

Although the problem of maintaining quality is greatly increased by hot summer weather, good management, proper equipment, and a quality program with milk producers make it possible to produce and sell a very high percentage of State Grade cheese throughout the year. Three plants in 1943 and two plants in 1944 sold no Undergrade cheese. These same plants sold only a small percentage of their cheese as Junior Grade during the summer months. Less emphasis on quality in 1944 compared to 1943 is also shown in Table 8. A smaller percentage of State Grade cheese was sold during the summer months.

This entire group of cheese factories and especially those which have sold a comparatively low percentage of State Grade cheese may well question their competitive situation from a quality standpoint in the postwar period. The expanded war demand for dairy products, including cheese, and a resulting short supply, has resulted in less rigid inspection and less discrimination on the part of the buyer during the war period than will very likely be the case in the postwar period. When demand falls off and supplies of cheese in turn are abundant, a lower quality product is much more apt to go "begging," and milk producers in turn will net less for their efforts.

PRICES

Method of Payment

All fourteen factories are buying milk from producers on a butterfat basis. This method of payment favors the high fat content milk, for the reason that the non-fat solids content per cent of fat is lower even though the total non-fat solids content in such milk is higher.

Variations

Several of the factories have paid a consistently low price for butterfat in milk and a few have paid a rather uniformly higher price. The price position (high, medium, or low) held by most factories shifts from month to month, because factory records are inadequate for determining the exact amount that can be paid. This results in overpayment for one month and underpayment the next. Some factories are still making lump sum deductions for the purchase price of new equipment and supplies. Such procedure results in an abnormally low price for butterfat in milk at that time. Some factories do not allow for depreciation of buildings and equipment when determining monthly operating costs, which in turn makes it appear as if they are overpaying, compared to other factories who make such an allowance. In effect such factories that are not making a depreciation charge are making overpayments on milk out of their capital, which is a very undesirable procedure.

Other factories which make a regular allowance for depreciation are in addition building reserves for the payment of debts or the expansion of facilities. In such cases the reported cash price to patrons is lower, but such factories are building up the equity of patrons in their own cooperative and are making the association financially strong at the same time that other factories are reducing their patrons' equity in their cooperative and are making their association financially weak. Such variation in policy must be carefully studied before accurate price comparisons can be made. The most impressive aspect of prices paid for butterfat in milk in this area is that prices are unnecessarily "jumpy" from factory to factory and from month to month. In 1943 the price variation between factories for one month was 12.0 cents per pound of butterfat. For one month in 1944 it was 10.0 cents. In 1943 one factory paid 75 cents per pound of butterfat in milk in October, paid only 65 cents in November, and paid 70 cents in December. Another factory paid 77.7 cents in October, only 70.0 cents in November, and 73.0 cents in December. A third paid 77 cents in November and only 68 cents in December. Similar month-to-month variations occurred in

1944 and early 1945. These variations appear especially unnecessary during a period of uniform prices for cheese (ceiling prices).

The money used in payment for milk was obtained from two sources, regular market returns and government subsidies. The amount applied monthly from each per pound of butterfat in milk, was recorded separately. The average total monthly price paid for butterfat in milk, and the range in market price, subsidy price, and total price is given in table 9.

Table 9. Average Total Price Paid for Butterfat in Milk and Range in Market Price, Subsidy Price, and Total Price

Month	1943				1944				1945			
	Average price--14 factories	Range			Average price--14 factories	Range			Average price--14 factories	Range		
		Market price	Subsidy price	Total price		Market price	Subsidy price	Total price		Market price	Subsidy price	Total price
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
Jan.	72.1	5.0	2.0	4.9	70.7	6.0	3.9	7.9	72.0	7.0	1.0	7.0
Feb.	72.0	5.0	2.1	6.6	72.3	5.0	4.4	6.0	71.7	8.0	1.5	9.0
Mar.	71.9	5.0	2.5	7.4	72.5	4.0	2.4	4.0	72.7	5.5	1.0	6.0
Apr.	72.6	5.0	3.5	6.3	72.6	5.0	2.0	6.0	72.4	5.0	1.5	5.0
May	73.6	6.0	1.3	6.3	73.6	8.0	1.0	9.0	73.4	6.0	2.0	7.0
June	73.4	6.0	3.4	6.1	73.8	6.0	1.0	6.0	73.8	8.5	1.9	8.0
July	73.8	8.0	2.5	7.0	73.6	6.0	1.4	6.0				
Aug.	73.5	7.4	1.4	7.1	72.9	5.0	1.6	7.0				
Sept.	74.1	6.0	2.0	7.0	72.4	6.0	2.0	8.0				
Oct.	73.7	7.5	2.5	6.7	72.2	6.0	1.1	6.1				
Nov.	71.1	11.0	4.0	12.0	72.0	5.2	2.0	7.0				
Dec.	71.4	4.4	4.0	6.0	72.3	8.8	2.2	10.0				

This is about the only large whole milk area in Minnesota where payment for milk is made on a butterfat basis. The price equivalent per hundredweight of 3.5 per cent milk is given in Table 10.

Table 10. Price Paid per Hundredweight of Milk--3.5 Per Cent Butterfat

Month	1943		1944		1945	
	Average butterfat price --14 factories	Price per cwt. of 3.5% milk	Average Butterfat price --14 factories	Price per cwt. of 3.5% milk	Average Butterfat price --14 factories	Price per cwt. of 3.5% milk
Jan.	72.1¢	$2.524	70.7	2.475	72.0	2.520
Feb.	72.0	2.520	72.3	2.531	71.7	2.510
Mar.	71.9	2.517	72.5	2.538	72.7	2.545
Apr.	72.6	2.541	72.6	2.541	72.4	2.534
May	73.6	2.576	73.6	2.576	73.4	2.569
June	73.4	2.569	73.8	2.583	73.8	2.583
July	73.8	2.583	73.6	2.576		
Aug.	73.5	2.573	72.9	2.552		
Sept.	74.1	2.594	72.4	2.534		
Oct.	73.7	2.580	72.2	2.527		
Nov.	71.1	2.489	72.0	2.520		
Dec.	71.4	2.499	72.3	2.531		
Average	72.8	2.548	72.5	2.538	72.7	2.545
High	73.8	2.583	73.8	2.583	73.8	2.583
Low	71.1	2.489	70.7	2.475	71.7	2.510

The maximum price paid per hundredweight of 3.5 per cent milk was $2.59. The average was about $2.55 per hundredweight. This is below the price paid for milk in other whole milk areas of Minnesota and in the area immediately surrounding these factories. Consolidation of these factories as a means of effecting economies in the cheesemaking operations and the production of higher quality and more uniform cheese should net the producers a higher return for their milk.

CONCLUSIONS AND SUGGESTIONS

1. If these factories are to continue present operations, some organizational adjustments would be desirable as a means of more fully meeting currently required cooperative procedure. Two associations would have to reestablish their legal status, and half of the associations that are now operating under old laws should change to the more recent Minnesota cooperative law.

2. Special attention should be given to a better system of records. The present system is inadequate, which is in part due to small volume operations and the inability to pay sufficiently for good records. The need for better records could be met by partial or complete consolidation. In case consolidation is not effected, serious consideration should be given to having several factories join in hiring a qualified full-time bookkeeper, or having all records of the member factories kept at the office of the Minnesota Cheese Producers' Association.

3. Most of the buildings and equipment are in only fair condition and in some cases in poor condition and are now in need of major repairs and replacements. If these factories are to continue present operations, the matter of financing major

repairs, replacements, and improvements would have to be considered. As shown in the balance sheet, these factories are in a fairly strong financial position, but a major portion of the assets are in the form of investments and long-term assets that cannot be liquidated at the will of the local factory. What current assets are available are needed in the regular operations of the business. Many of these factories have paid out part of their capital for milk over a period of time because a depreciation reserve was not set up. Because of this, cash funds are not available, and any replacements and improvements would have to be paid for out of borrowings or out of current income from cheese which in turn would reduce the milk checks to the producers. With the small volume of cheese made per factory, the resulting interest cost, if money was borrowed, together with larger depreciation costs, would increase the total manufacturing cost per pound of cheese. The higher per unit operating cost and a resulting lower net return to the producer would weaken the competitive position of these factories, and probably would result in a further loss of patrons. Before replacements and improvements are made at any one factory, the question should be raised as to whether this is in the best interest of the producers it serves. Consolidation of these factories should result in a lower overhead cost per pound of cheese made.

4. Operating costs are comparatively high in these factories. Labor is the largest single cost item. The efficiency in the use of labor varies with the seasonality in milk receipts. Because the labor load increases with increased milk receipts, extra help has to be secured in 14 different factories which cannot always be used at maximum efficiency. If milk were concentrated at only one or two points in the area, the work load and the number of employees could be better coordinated, resulting in lower labor costs per pound of cheese made. Similarly, machinery and equipment could be used more efficiently and manufacturing costs reduced. Such consolidation of cheesemaking equipment at one point should make it possible to reduce total operating costs per pound of cheese by 1 cent or more. Efficient large volume cheese factories have succeeded in holding total costs per pound of cheese made to below 2 cents per pound, even during the war period when some items of cost increased. A saving in operating costs of 1 cent per pound of cheese would increase the return to the producer by $8\frac{3}{4}$ cents per hundredweight of milk (a hundredweight of milk yielded about 8.75 pounds of cheese in these factories).

5. A quality problem faces these factories in the postwar period. A smaller percentage of State-Grade cheese was sold in 1944 than in 1943, although inspection was probably less rigid, and buyers less discriminatory. Improvements in cheesemaking methods, and pasteurization of the milk used in making cheese will be necessary. Expenditures for pasteurization equipment alone at all the factories now making cheese from raw milk is practically prohibitive because it would result in too high an overhead cost for the volume of cheese made.

6. Strong competition prevails in the area. Competitors are in most cases larger scale dairy plants which have developed a progressive and effective manufacturing and marketing program. The limited area covered by each of these factories and the close working relationship between milk producers, directors (one out of every six patrons is a director), and the cheesemaker has kept patrons loyal to the small local factory, and the loss of patrons has not been rapid. However, most of these factories have had a gradual loss of patrons. One secretary reported a loss of "five patrons within the last few years." This is a significant loss when the total number of patrons is only about 30 and the volume of milk per patron is comparatively large. Most factories reported that one, two, or three of the competing dairy plants had patrons within their immediate area and in some cases within a half mile of the factory.

7. The volume of milk handled by the 14 factories is not too large for one cheesemaking operation. Disposition of the whey would also be easier than if manufacturing operations were continued at a number of points. If the economies effected should result in increased patronage and volume, the increased volume could still be handled efficiently at one point. A number of milk plants in the state are handling more than twice the volume of milk now handled by the 14 cheese factories.

8. The only sound basis for consolidation of factories is to lower operating costs and to bring about a higher net return to milk producers in the area. This should be kept in mind when the location and the number of operating units (one or two) are decided upon. Railroad trackage, quality of highways, nearness of competition, and location of present and potential volume should receive careful consideration. With Minnesota Cheese Producers' Association headquarters and some physical facilities already established at Pine Island, and more than one-fifth of the milk now being made into cheese at that point, the location of a large factory at Pine Island appears favorable. If a second operating unit should be desired, serious consideration should be given to the continuation of one of the existing factories with more modern equipment in the southern part of the area that could be operated on a somewhat smaller scale. Operations might be discontinued at this plant during the short milk supply season if transportation of the milk to the one larger plant would prove more economical. To properly coordinate such operations it would seem desirable to have the Minnesota Cheese Producers' Association own all facilities regardless of location or the number of operating units.

9. Better roads, truck transportation, and improved equipment for large-volume operation have rendered the present system of cheesemaking in this area obsolete. Unless some form of consolidation is effected, a large number of these factories will very likely be forced out of business within a relatively short period of time.

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